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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/549,952	09/25/2006	Urban Eriksson	15436.861.2a.1	1348

22913 7590 11/01/2007
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EXAMINER

PRINCE, KAJLI

ART UNIT	PAPER NUMBER
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2874

MAIL DATE	DELIVERY MODE
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11/01/2007

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/549,952

Applicant(s)

ERIKSSON ET AL.

Examiner

Kajli Prince

Art Unit

2874

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 09 July 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-13 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 11-13 is/are allowed.
- 6) ☒ Claim(s) 1-10 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____
- ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- ☐ Notice of Informal Patent Application
- ☐ Other: _____

DETAILED ACTION

Response to Amendment

Applicant's Amendment filed 9 July 2007 has been fully considered and entered.

Response to Arguments

Applicant's arguments, see pages 6-9, filed 9 July 2007, with respect to the rejection(s) of claim(s) 1-10 under 35 USC 102 & 103 have been fully considered and are persuasive.

Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection has been set forth. Applicant's arguments, see page 6, with respect to the objection of claims 4-5 and 9-10 has been fully considered and are persuasive. Therefore, the object has been withdrawn.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lam et al. (US 2003/0147574 A1).

The reference teaches a traveling-wave electroabsorption (EA) modulator (Title, Abstract) for modulating optical signal by means of an optical waveguide with a distributed EA region (Fig's 1A,B; paragraph 11, 16, and 31-33; Table 1). The device contains a transmission line (15) both transparent (passive) and EA (active) regions (Fig. 1B, paragraph 31), wherein the transparent regions are longer in length than the EA regions. Such that, the total length of the transmission line is longer than the total length of the optical transmission line over the same distance (i.e. cascaded). Table 1 shows how various result effective variables (e.g. characteristic impedance) can be controlled by varying the length of the transparent region (paragraph 34) (see also – paragraphs 11, 16, and 32). Thus, the reference teaches that the characteristic impedance of the transmission line can be matched to the input and output impedance of devices connected to the line, as high as 50 ohms (paragraph 7, 33). This allows for the velocity of the electrical signal and optical signal to be substantially matched, for enhanced encoding of the optical signal.

It is inherent in an optical modulator to have a microwave transmission line where the electrical propagation index of the unloaded microwave transmission line is lower than the optical propagation index of the optical waveguide for the device to operate as a modulation device.

However, the reference fails to explicitly teach adjusting and loading the length of the microwave transmission line to achieve a specific Bloch impedance.

As discussed above, the reference teaches that the length of the microwave transmission lines can be changed to achieve desired impedance (Summary of the Invention, Table 1, paragraph 33). Thus, it would have been within the level of ordinary skill to one of skill in the art to use the teachings in the reference, with regard to adjusting and loading the length of the transmission lines, to optimize the device to a specific Bloch impedance, for the benefit of matching the characteristic impedance of the transmission line to the input and output impedance of devices connected to the line, as high as 50 ohms. Thus, enabling the velocity of the electrical signal and optical signal to be substantially matched, for enhanced encoding of the optical signal.

Allowable Subject Matter

Claims 11-13 are allowed. The following is an examiner's statement of reasons for allowance: The prior art cited on attached form PTO-892 is the most relevant prior art known. However, the invention of claims 11-13 distinguishes over the prior art of record because none of the references either alone or in combination disclose or render obvious an optical modulator having an active segment and a passive segment, as defined in claim 11, comprising: an electrically conducting layer arranged on top of at least a portion of a substrate; and an electrical electrode forming a second part of the electrical transmission line, wherein the electrical

electrode is arranged on top of and in connection with the optical waveguide in the active segment. Claims 12-13 depend from claim 11. A discussion of the cited prior art follows.

The cited reference discloses a device wherein the conducting region is formed on top of the waveguide. However, the cited reference does not disclose or suggest a first and second part of an electrical transmission line, comprising an electrically conducting layer arranged on top of at least a portion of a substrate and an electrical electrode forming a second part of the electrical transmission line, wherein the electrical electrode is arranged on top of and in connection with the optical waveguide in the active segment.

Hence, there would be no reason or suggestion for one of ordinary skill in the art to use the prior art to make the invention of claims 11-13.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kajli Prince whose telephone number is (571) 270-1280. The examiner can normally be reached on Monday & Wednesday-Friday, 6:00am to 5:00pm (EST).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Rodney Bovernick can be reached on (571) 272-2344. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Hemang Sanghavi/
Primary Examiner
Art Unit 2874

/Kajli Prince/